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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,806	06/20/2005	Hugues Lebrun	274235US6PCT	6690
22850	7590	03/06/2007		
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER TYNAN, MATTHEW	
			ART UNIT	PAPER NUMBER
			2871	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	03/06/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

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patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No. 10/539,806	Applicant(s) LEBRUN ET AL.	
	Examiner Matthew Tynan	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>9/14/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 9/14/2005 was filed after the mailing date of the instant application on 6/20/2005. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Objections

3. Claims 18 and 24 are objected to because the word "cutout" implies a hole or material otherwise removed by cutting. The examiner understands the applicants' claim to mean an edge formed by cutting.
4. . Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. Claims 11-13 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walker et al. (U.S. Pub. No. 2002/0024628) in view of Huang et al. (U.S. Pub. No. 2002/0071085) and Ohno (U.S. Patent No. 4,600,273).

7. Regarding claim 1, Walker et al. discloses the following:

- A method of fabricating a plurality of individual liquid crystal cells, each comprising a first substrate (100, Fig. 11) comprising a back electrode (130) and a second active matrix substrate (115), which are assembled with a sealing frame (150, Fig. 11; see also Fig. 7) producing a cavity (207) between the substrates for liquid crystals, the first substrates being formed collectively on a transparent support, the second substrates being formed collectively on a silicon wafer, and comprising contact pads (405, Fig. 26), the method comprising:
 - Cutting the second substrate from the silicon wafer, along cutting lines corresponding to the contour of the sealing frame (Fig. 21).
 - Transferring each of the second cut substrates to the transparent support and assembling each of the second cut substrates on the transparent support, with a corresponding first substrate and separating into individual liquid crystal cells by cutting the transparent support ([0104], lines 1-3).

8. Walker et al. does not teach:

- Forming means of connection on each first substrate opposite the contact pads of the second substrates.
- The sealing frame is disposed between each first and second substrate of a cell, so as to overlap the contact pads, and an opposite portion of the means of

connection, the frame comprising a seal including an insulating material and conducting elements disposed in the seal for electrical continuity between each pad and a corresponding element of the means of connection.

- A zone of each first substrate comprising the means of connection is overhanging with respect to the second substrate to which it is assembled.

9. However, Huang et al. teaches:

- Forming means of connection (94, Fig. 8) on each first substrate (88) opposite the contact pads (86) of the second substrates (82).
- A zone of each first substrate comprising the means of connection is overhanging with respect to the second substrate to which it is assembled (see Fig. 8). This is beneficial for several reasons, including that it allows an adhesive for bonding the liquid crystal panel and the printed circuit board to be cured by UV light transmitted through the transparent substrate ([0043], lines 3-6).

10. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify method taught by Walker et al. using the overhanging substrate taught by Huang et al. in order to allow an adhesive for bonding the liquid crystal panel and the printed circuit board to be cured by UV light transmitted through the transparent substrate.

11. Furthermore, Ohno teaches:

- The sealing frame (103, Fig. 7) is disposed between each first and second substrate of a cell, so as to overlap the contact pads (105), and an opposite portion of the means of connection (104), the frame comprising a seal including an insulating material (binder 103) and conducting elements (101) disposed in the

seal for electrical continuity between each pad and a corresponding element of the means of connection.

12. Ohno teaches that the epoxy materials including the contact media used as a conductive seal provides liquid crystal panels of simple construction, including decreasing the number of process steps (col. 8, lines 25-32, i.e. vs. LCDs wherein the sealing portion and contact portion between the upper and lower electrodes are separated; col. 8, lines 33-37).

13. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method taught by Walker et al. and Huang et al. using the conductive seal taught by Ohno in order to simplify device construction by decreasing the number of process steps.

14. Regarding claim 12, Walker et al. discloses filling the cavities with liquid crystals (Figs. 16 and 17).

15. Regarding claim 13, Ohno teaches the conducting elements include conducting balls (col. 2, lines 5-15).

16. Regarding claim 15, Walker et al. teaches conducting elements including metal tags (405) produced on the silicon substrate.

17. Regarding claim 16, Ohno teaches the conducting elements are include spacers (col. 3, lines 6-8).

18. Regarding claim 17, Ohno teaches other spacer elements disposed in the seal, the other spacer elements being conducting or otherwise, and of a same nature as or of a different nature from the conducting elements.

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19. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Walker et al., Huang et al., and Ohno as applied to claim 11 above and further in view of Chang et al. (EP 827190 A2).

20. Regarding claim 14, the combination of Walker, Huang, and Ohno does not teach conducting elements including resin tags furnished with a conducting layer.

21. However, Chang et al. teaches conducting elements (Fig. 1A) including resin tags (32) and furnished with a conducting layer (36). This configuration allows a bond to be made with low bonding force, greatly reduces the force tending to separate the connections after bonding, and results in extremely reliable physical and electrical connections (col. 2, lines 29-34).

22. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device taught by Walker et al., Huang et al., and Ohno using the conductive bump taught by Chang in order to create extremely reliable physical and electrical connections.

23. Claims 18-21, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. (U.S. Pub. No. 2002/0071085) in view of Ohno (U.S. Patent No. 4,600,273).

24. Regarding claim 18, Huang et al. teaches:

- A first transparent substrate (88) and a second silicon substrate (82) comprising an active matrix circuit with contact pads ([0022], lines 7-9), the substrates being assembled with a sealing frame (92) producing a cavity between the substrates for liquid crystals (890).
- The second substrate includes a cutout corresponding to a contour of the sealing frame (inherent since the second substrate is cut [0024], line 8).

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- The cell comprises means of connection (94) of the active matrix that are relocated onto the first substrate and are disposed overhanging with respect to the second substrate (see Fig. 9).

25. Huang et al. does not teach:

- The sealing frame includes a seal that overlaps the contact pads on the second substrate and an opposite portion of the means of connection, and conducting elements disposed in the seal for electrical continuity between each of the contact pads and a corresponding portion of the means of connection.
- The first substrate comprises a back electrode.

26. However, Furthermore, Ohno teaches:

- The sealing frame includes a seal (103, Fig. 7) that overlaps the contact pads (105) on the second substrate and an opposite portion of the means of connection (104), and conducting elements (101) disposed in the seal for electrical continuity between each pad and a corresponding portion of the means of connection.

27. Ohno teaches that the epoxy materials including the contact media used as a conductive seal provides liquid crystal panels of simple construction, including decreasing the number of process steps (col. 8, lines 25-32, i.e. vs. LCDs wherein the sealing portion and contact portion between the upper and lower electrodes are separated; col. 8, lines 33-37).

28. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method taught by Huang et al. using the conductive seal taught by Ohno in order to simplify device construction by decreasing the number of process steps.

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29. Ohno also teaches the first substrate has a back electrode (104) for applying an electric field to the liquid crystal, a structure that is conventional in the art.

30. Regarding claim 19, Ohno teaches the conducting elements are include spacers (col. 3, lines 6-8).

31. Regarding claim 20, Ohno teaches other spacer elements disposed in the seal, the other spacer elements being conducting or otherwise, and of a same nature as or of a different nature from the conducting elements of the seal.

32. Regarding claim 21, Ohno teaches the conducting elements include conducting balls (col. 2, lines 5-15).

33. Regarding claim 23, Huang et al. teaches the conducting elements include metal tags produced on the silicon substrate (Abstract, lines 5-6).

34. Regarding claim 24, the combination of Huang et al. and Ohno et al. as applied to claim 18 teaches a liquid crystal cell comprising:

- A first transparent substrate (88) comprising a back electrode and a second silicon substrate (82) comprising an active matrix circuit with contact pads ([0022], lines 7-9), the substrates being assembled with a sealing frame (92) producing a cavity between the substrates for liquid crystals (890).
- The second substrate includes a cutout corresponding to a contour of the sealing frame (inherent since the second substrate is cut [0024], line 8).
- The cell comprises means of connection (94) of the active matrix that are relocated onto the first substrate and are disposed overhanging with respect to the second substrate (see Fig. 9).

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- The sealing frame includes a seal (Ohno, 103, Fig. 7) that overlaps the contact pads (105) on the second substrate and an opposite portion of the means of connection (104), and conducting elements (101) disposed in the seal for electrical continuity between each pad and a corresponding portion of the means of connection.

35. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. and Ohno as applied to claim 18 above and further in view of Chang et al. (EP 827190 A2).

36. Regarding claim 22, the combination of Huang and Ohno does not teach conducting elements including resin tags furnished with a conducting layer.

37. However, Chang et al. teaches conducting elements (Fig. 1A) including resin tags (32) and furnished with a conducting layer (36). This configuration allows a bond to be made with low bonding force, greatly reduces the force tending to separate the connections after bonding, and results in extremely reliable physical and electrical connections (col. 2, lines 29-34).

38. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device taught by Huang et al. and Ohno using the conductive bump taught by Chang in order to create extremely reliable physical and electrical connections.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew Tynan whose telephone number is 571-270-1433. The examiner can normally be reached on Mon-Fri. 7:30-4pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on 571-272-4491. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

[Handwritten signature] 2/24/07

Andrew Schechter
ANDREW SCHECHTER
PRIMARY EXAMINER